

## CLAIMS

### I Claim:

1. An apparatus for improving a stop band response of a surface acoustic wave device  
5 comprising:  
a surface acoustic wave device having an output and further having external  
electromagnetic coupling and acoustic coupling; and  
a cancellation network coupled to the surface acoustic wave device to reduce  
external electromagnetic feed through;  
10 wherein the cancellation network reduces the amount of external  
electromagnetic feed through at the output of the surface acoustic wave device.
2. The apparatus of claim 1 wherein the cancellation network is selected from a group  
comprising at least a passive network and an adjustable network.
- 15 3. The apparatus of claim 1 wherein surface acoustic wave device is a surface  
acoustic wave filter.
4. The apparatus of claim 1 further comprising:  
20 an input matching circuit coupled to the surface acoustic wave device; and  
an output matching circuit coupled to the surface acoustic wave device.
5. The apparatus of claim 4 wherein the cancellation network cancels electromagnetic  
feed through in the input matching circuit and the output matching circuit.
- 25 6. The apparatus of claim 1 wherein the cancellation network reduces external  
electromagnetic feed through at the output of the surface acoustic wave device by at  
least 2dB.
- 30 7. The apparatus of claim 6 wherein the cancellation network further reduces internal  
electromagnetic feed through at the output of the surface acoustic wave device.

8. A method for canceling electromagnetic feed through comprising the steps of:  
providing a surface acoustic wave device having external electromagnetic feed through; and  
coupling a cancellation network to the surface acoustic wave device; and  
5 reducing the external electromagnetic feed through at an output of the surface acoustic wave device.
9. A method for canceling electromagnetic feed through of claim 8 further comprising the step of canceling substantially all of the external electromagnetic feed through.  
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10. A method for canceling electromagnetic feed through of claim 8 further comprising the step of reducing internal electromagnetic feed through at the output of the surface acoustic wave device.  
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11. A method for canceling electromagnetic feed through of claim 10 further comprising the step of canceling substantially all of the internal electromagnetic feed through and the external electromagnetic feed through at the output of the surface acoustic wave device.  
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12. A method for canceling electromagnetic feed through of claim 8 further comprising the step of adjusting the cancellation network to increase the reduction of the electromagnetic feed through in a stop band of the surface acoustic wave device.
- 25 13. A method for canceling electromagnetic feed through of claim 12 further comprising the step of measuring the output of the surface acoustic wave device during the step of adjusting the cancellation network.
14. A method for canceling electromagnetic feed through of claim 8 wherein the  
30 cancellation network is a passive network.
15. A method for canceling electromagnetic feed through of claim 8 wherein the cancellation network is an adjustable network.

16. A method for canceling electromagnetic feed through comprising the steps of:  
providing a surface acoustic wave device having external electromagnetic feed  
through; and  
coupling an adjustable cancellation network to the surface acoustic wave  
5 device; and  
adjusting the cancellation network to reduce the external electromagnetic feed  
through in a stop band of the surface acoustic wave device.
17. A method for canceling electromagnetic feed through of claim 16 further  
10 comprising the step of measuring a transfer function of the cancellation network.
18. A method for canceling electromagnetic feed through of claim 17 further  
comprising the step of synthesizing a passive cancellation network.
19. A method for canceling electromagnetic feed through of claim 17 further  
15 comprising the step of coupling a passive cancellation network to the surface acoustic  
wave device.
20. A method for canceling electromagnetic feed through of claim 19 wherein the  
20 passive cancellation network has a transfer function that is substantially similar to the  
measured transfer function of the adjustable cancellation network.
21. A method for canceling electromagnetic feed through of claim 16 further  
comprising the step of reducing internal electromagnetic feed through in the stop band  
25 of the surface acoustic wave device.
22. A method for canceling electromagnetic feed through of claim 16 further  
comprising the step of canceling external electromagnetic feed through in the stop  
band of the surface acoustic wave device.  
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23. A method for canceling electromagnetic feed through of claim 16 wherein the  
surface acoustic wave device is a surface acoustic wave filter.